CAUTION

- Dry chemical agents will harden after being exposed to moisture. It is therefore important to avoid exposing them to any moisture during stowage, handling, and recharging evolutions.
- When PKP is used as the fire suppression agent on an aircraft fire and the agent is directed or ingested into an engine or accessory section, the Fire Chief, on-site personnel using the extinguisher, or senior fire official shall notify the Maintenance Officer of the unit involved or, in the case of a transient aircraft, the supporting facility. PKP injected into a jet engine cannot be completely removed without disassembly of the engine to remove deposits that penalize engine performance and restrict internal cooling air passages.

3.4.3.2 Application

These extinguishers have a discharge range of approximately 10 to 40 feet, depending on extinguisher size. Discharge time varies from 8 to 60 seconds. When used on flammable liquid fires, the stream should be directed at the base of the flame, gradually moving toward the back of the fire while sweeping the nozzle rapidly from side to side.

3.5 PROTECTIVE CLOTHING AND EQUIPMENT

3.5.1 Proximity Fire Fighting Protective Ensemble (PFFPE)

Aircraft firefighting/rescue protective clothing is a prime safety consideration for personnel engaged in firefighting and rescue work. The Proximity Fire Fighting Protective Ensemble (PFFPE) offers a means of providing protection to firefighters because of its high percentage of reflectivity to radiant heat. PFFPE fabrics have been adopted for use in the Navy mishap/rescue program. Firefighters assigned ARFF duties, both shipboard and shorebased, shall be provided with a complete PFFPE. The recognized PFFPE is comprised of the following elements: coat, trousers, helmet (proximity) which includes an attached helmet shroud (proximity) and helmet cover (proximity — separate or as part of the helmet shroud), footwear (proximity boots), gloves (proximity), hood (anti-flash or firefighting), and summer aviator gloves (for shipboard application only, under the proximity gloves).

Note

ARFF personnel shall wear head protection while performing duties that require the individual to be on the exterior and above ground level on all aircraft firefighting and rescue vehicles.

3.5.1.1 Hood Requirements

The hood specified as an element of the PFFPE, worn under the proximity helmet/shroud/cover combination, shall be either the standard Navy anti-flash hood (NSN 4210-01-493-4694) or any "fire fighting protective hood" meeting the requirements of National Fire Protection Association (NFPA) 1971 that bears a label indicating conformance to such. Note that there are no unique NFPA proximity requirements for hoods at this time. As such, the requirements in the structural portions of NFPA 1971 are the only available requirements applicable for hoods. Therefore, a unique "proximity hood" is not manufactured or available. The hood is the only element of the PFFPE that is acceptable to be in accordance with the structural NFPA standards.

3.5.1.2 General Requirements for the PFFPE Coat, Trousers, Helmet, Footwear, and Proximity Gloves

Procurements of the coat, trousers, helmet (also including the attached shroud), footwear, and proximity gloves specified as elements of the PFFPE shall meet the requirements of NFPA 1971, as applicable to proximity ensembles.

Current PFFPE meeting the requirements of the former NFPA 1976, 2000 edition can continue to be utilized until the garments are no longer serviceable. Each of these elements shall bear one of the following two labels as evidence of conformance to such:

1. "This (element name will be inserted here) meets the (element name will be inserted here) requirements of NFPA 1976, standard on protective ensemble for proximity fire fighting, 2000 edition. Do not remove this label."

2. "This proximity fire fighting protective (element name will be inserted here) meets the (element name will be inserted here) requirements of NFPA 1971. Do not remove this label."

All future procurements of these PFFPE elements shall be in accordance with the proximity portions of NFPA 1971, 2007 edition. PFFPE elements that are currently on-hand that meet the requirements of NFPA 1976, 2000 edition, as described above, are acceptable for use until they are no longer serviceable, as described in paragraph 3.5.1.6.

Note

- NFPA 1971 includes requirements for both proximity and structural fire fighting protective ensembles. For elements manufactured in accordance NFPA 1971, only those meeting the specific proximity requirements are acceptable for use in proximity applications with the exception of the hood. All acceptable elements, with the exception of the hood, will bear the label above that includes the word "proximity" in its verbiage. Elements, with the exception of the hood, that only list "structural" on the NFPA conformance label are not acceptable for use in proximity applications.

- Some elements of the PFFPE are comprised of multiple detachable components, such as the shells and liners of the coats and trousers. These elements will bear the following on its product label:
"For compliance with the proximity fire fighting (element name will be inserted here) requirements of NFPA 1971 (or NFPA 1976), the following protective items must be worn in conjunction with (element name will be inserted here): (additional components will be listed here) do not remove this label."

- All components/elements listed on the label described above shall be employed/worn by the user whenever the use of a PFFPE is required in order to afford proper protection to the wearer.

3.5.1.3 Special Requirements for the PFFPE Helmet, Helmet Shroud, and Helmet Cover

The helmet, helmet shroud, and helmet cover components that form the proximity fire fighting protective helmet element of the PFFPE must be worn together and properly matched in order to afford proper protection to the wearer. As such, helmet shrouds manufactured in accordance with NFPA 1971 will bear the following additional wording on their labels:

"For compliance with the proximity fire fighting requirements of NFPA 1971, this shroud can only be used with the following noted helmet(s): (acceptable helmet models will be inserted here)."

These helmet shrouds shall only be used with the helmet model(s) listed on the label portion described above.

Note

Helmet shrouds manufactured in accordance with NFPA 1976, 2000 edition, and helmet covers where separate from the helmet shroud, may not include helmet model information on their label. These are acceptable for use; however, it is still necessary for these to be matched with the helmet for which it was designed. As such, every possible effort shall be made to ensure these shrouds and covers are only used with the model helmet they were originally supplied with.

3.5.1.4 Special Requirements and Sizing for PFFPE Coat and Trouser

PFFPE coats and trousers are designed as a set to ensure that the elements have a proper interface with one another to afford and maintain protection to the wearer during anticipated activities and movements. As such, only coats and trousers manufactured by the same manufacturer of the same model shall be worn together by the user whenever the use of a PFFPE is required. In addition, coats and trousers shall be properly sized for the wearer to ensure that the PFFPE coat and PFFPE trousers have at least a 2-inch overlap of all layers so there is no gaping of the total thermal and radiant heat protection when the protective garments are worn. The minimum overlap shall be determined by measuring the garments on the wearer, without SCBA, in both of the following positions:

1. Position A. Standing, hands together reaching overhead as high as possible.
2. Position B. Standing, hands together reaching overhead, with body bent forward at a 90-degree angle, to the side (either left or right), and to the back.

3.5.1.5 Requirements for Summer Aviator Gloves

There are no NFPA standards associated with aviator gloves. Acceptable aviator gloves are available through the stock system under the following NSNs: 8415-01-504-5173 (size: M); 8415-01-504-5562 (size: L); and 8415-01-504-3063 (size: XL).

3.5.1.6 Care and Maintenance of Proximity Fire Fighting Protective Ensemble (PFFPE)

The PFFPE shall be maintained in accordance with NFPA 1851. The heat reflective ability of PFFPE clothing items is reduced when they are stained or otherwise soiled. It is imperative that careful attention be given to the following care, cleaning, and maintenance instructions.

1. Clean and store in accordance with manufacturers' specifications. Storage should be on hangers with suitable hanging space to prevent metalized fabrics from creasing or cracking. If folded, the folds should be loose. Do not sit on a folded garment.

Note

Garments shall be dry prior to storage.

2. Dirt and soot should be sponged off with mild soap and water, and the aluminum surface dried with a clean cloth. Rub gently to avoid removal of the aluminum.

Note

Brushes shall not be used on the aluminum surface.

   a. Cleaning solution shall be in accordance with manufacturer's instructions. When instructions not available, at a ratio of one ounce of soap to one gallon of water. Up to three ounces of soap may be used; increasing solution concentration does not mean better cleaning.
   b. Rinse off all soap mixtures with clean water.

3. Grease stains shall not be removed by the use of dry cleaning solvents (isopropanol or perchorenthylene react with the aluminum surface and may etch the metal). Clean the clothing with water and wipe dry. Allow the garment to hang in a ventilated location at room temperature.

4. AFFF may be removed by sponging clean with mild soap and water. Allow the garment to hang to dry in the open or in a place with good circulation. During firefighting operations, it is not always possible to prevent agents from getting onto protective clothing. However, PFFPE clothing that has been covered or spotted with agent will have less heat reflection than the suit normally provides.
5. Corrosive chemicals will react with the aluminum surface and may etch the metal. Clean the clothing with soap and water solution and wipe dry. Allow clothing to hang in ventilated location at room temperature.

CAUTION

PKP will react to aluminum surface if left to dry, after using PKP follow cleaning instructions in detail.

6. Outer shell and other radiant reflective components of PFFPE and ensemble elements shall not be cleaned with a brush or other abrasive cleaning devices.
7. Outer shell and other radiant reflective components of PFFPE and ensemble elements shall not be machine washed and not machine dried.

Note

If liner system is laundered in the shipboard laundry, Wash Formula III (100°F with detergent) shall be used.

8. Removal of composite fibers from PFFPE shall be accomplished with the use of a high-efficiency vacuum cleaner (with a .3 micron HEPA filter).
9. Inspection criteria for garments shall be:
   a. Replace aluminized shell components when metal wears off or fabric cracks/tears.
   b. Liner shall be replaced or repaired if torn or inner batting becomes visible due to wear. Repairs shall be made only by repair facility which is authorized by the original garment manufacturer.
      (1) Spray painting worn proximity clothing with aluminum paint serves no useful purpose, is a dangerous practice and is not authorized.

WARNING

Painted areas on proximity clothing provide no protection from high radiant heat levels and may result in serious burn injuries.

   c. Advanced cleaning and repair shall only be performed by a verified Independent Service Provider (ISP). The verified ISP shall meet all the requirements of National Fire Protection Standard 1851-2014 Edition Chapter 11. The verified ISP shall submit certification from the third party certifier that they are certified. The verified ISP shall also submit verification from the original manufacturer that they are certified to perform cleaning and repairs on their elements.

Note

Cleaning and or repairs shall not exceed 50% of replacement cost for any items being cleaned and repaired.

3.5.1.7 Care of PFFPE Helmet Faceshield

The gold-coated faceshield is a reflective heat shield. The faceshield is not a sun shield. This item should be kept in excellent condition to maintain the radiated heat-reflective efficiency. In particular, when the faceshield's gold surface

becomes worn, scratched, or marred, 90 percent of the heat protection is lost and the faceshield should be replaced immediately.

Note

For shipboard crews, one (1) spare gold reflective faceshield shall be maintained for each PFFPE helmet. Spare faceshields shall be from the same manufacturer, and same model, as the helmet. The gold faceshield is optional for Navy shore based airfield firefighting.

1. For adequate protection, replace worn goldcoated faceshield. Ensure the gold surface is on the outside as marked on the edge.
2. Avoid touching or wiping gold surface as much as possible.
3. Clean faceshield without removing it from the helment using a clean soft cloth with mild soapy water; rinse and pat dry.

3.5.1.8 Back-Up Ready Stock of PFFPE Sets

Shorebased Fire departments/ARFF units should maintain a backup ready stock of PFFPE of approximately 10 percent of total unit requirements and must establish a rapid procurement procedure.

3.5.2 Firefighters' Station/Work Uniforms

Firefighters' station/work uniforms shall comply with DODI 6055.06.

3.5.3 Self-Contained Breathing Apparatus

Self-contained breathing apparatus (SCBA) shall be made available to all Firefighters/Salvage Personnel required in the immediate vicinity of an aircraft mishap. An SCBA is a device worn by Firefighters, Rescue, and others to provide breathable air in an immediately dangerous to life or health (IDLH) environment. An SCBA has a full-face mask, regulator, pressure reducer, air cylinder, cylinder pressure gauge, associated hoses, and a harness with adjustable shoulder straps and waist belt which lets it be worn on the back. The air cylinder is usually of a 30-, 45-, or 60-minute rated duration. This cylinder however does not usually last the full rated duration depending on the exertion and fitness of the wearer.

3.5.4 Damage Control/Firefighter's (DC/FF) Helmet

The DC/FF's helmet is designed to protect the head, neck and face from short duration flame (flash) exposure, heat and falling objects. The helmet shell is made from a special woven heat-resistant fiberglass design. This heat and flash protection is enhanced by wearing a Firefighter's hood beneath the helmet. The helmet has a wide brim that extends at the back to protect the Firefighter's neck and collar from hot objects or water and falling debris. It has a fold down plastic shield to protect the eyes from heat flash and direct bursts of straight stream water in firefighting evolutions. The helmets are colored bright red with reflective markings. The helmets have a chin strap and an adjustable "ratchet-type" suspension. Some have a metal or plastic bracket attachment on the side brim for helmet lights and others have a light that fits on the helmet. The Firefighter's helmet is certified to meet NFPA 1972-1992 Standard for Structural Fire Helmets. The Firefighter's helmet may be procured through the supply system (MILSTRIP requisition, NSN 4210-01-493-7428) or through DLA's firefighting prime vendor contract.

Note

The DC/FF's Helmet is NOT the same helmet as the PFFPE Helmet discussed in paragraph 3.5.1. The DC/FF is NOT to be used as a replacement or substitute for the PFFPE Helmet as it is not equipped with or designed to specifically interface with the required aluminized reflective shroud/cover nor is it equipped with the reflective proximity faceshield.